

WHAT IS CLAIMED IS:

1. A piezoelectric structure comprising:
a vibrational plate;
a piezoelectric film;

5 said vibrational plate including a layer of a
monocrystal material, a polycrystal material, a
monocrystal material doped with an element which is
different from an element constituting the monocrystal
material, or a polycrystal material doped with an
10 element which is different from an element
constituting the polycrystal materials, and oxide
layers sandwiching the aforementioned layer,

 said piezoelectric film has a single
orientation crystal or monocrystal structure.

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2. A piezoelectric structure according to Claim
1, wherein a film thickness $D1$ of said vibrational
plate and film thicknesses $d1$, $d2$ of said oxide layers
satisfy $d1+d2 \leq D1$.

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3. A piezoelectric structure according to Claim
2, wherein a film thickness $D2$ of said piezoelectric
film satisfy $d1+d2+D1 \leq 5 \times D2$.

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4. A piezoelectric structure according to Claim
1, wherein a composition of said piezoelectric film is

either one of PZT, PMN, PNN, PSN, PMN-PT, PNN-PT, PSN-PT, PZN-PT, and has a single layer structure or a laminated structure of different compositions.

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5. A piezoelectric structure according to Claim 1, wherein said oxide layer comprises at least one of SiO_2 , YSZ, Al_2O_3 , LaAlO_3 , Ir_2O_3 , MgO, SRO, STO.

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6. A manufacturing method for manufacturing a piezoelectric structure having a vibrational plate and a piezoelectric film, said method comprising:

15 a step of forming a second oxide layer on a silicon substrate having a monocrystal silicon layer on a silicon layer with an oxide layer interposed therebetween;

a step of forming a piezoelectric film of a single orientation crystal or monocrystal structure on the second oxide layer; and

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a step of an upper electrode on the piezoelectric film.

7. A liquid ejecting head comprising:

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a liquid ejection outlet;

a main assembly substrate portion having a pressure chamber in fluid communication with said liquid ejection outlet and having an opening;

a piezoelectric structure connected so as to
plug the opening;

said piezoelectric structure including,

a vibrational plate;

a piezoelectric film;

said vibrational plate including a layer of a
monocrystal material, a polycrystal material, a
monocrystal material doped with an element which is
different from an element constituting the monocrystal
material, or a polycrystal material doped with an
element which is different from an element
constituting the polycrystal materials, and oxide
layers sandwiching the aforementioned layer,

said piezoelectric film has a single
orientation crystal or monocrystal structure.

8. A liquid ejecting head according to Claim 7,
wherein a film thickness $D1$ of said vibrational plate
and film thicknesses $d1$, $d2$ of said oxide layers
satisfy $d1+d2 \leq D1$.

9. A liquid ejecting head according to Claim 8,
wherein a film thickness $D2$ of said piezoelectric film
satisfy $d1+d2+D1 \leq 5 \times D2$.

10. A liquid ejection head according to Claim 6,
wherein a composition of said piezoelectric film is
either one of PZT, PMN, PNN, PSN, PMN-PT, PNN-PT, PSN-
PT, PZN-PT, and has a single layer structure or a
5 laminated structure of different compositions.

11. A liquid ejection head according to Claim 6,
wherein said oxide layer comprises at least one of
SiO₂, YSZ, Al₂O₃, LaAlO₃, Ir₂O₃, MgO, SRO, STO.
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12. A manufacturing method for a liquid ejecting
head including a liquid ejection outlet; a main body
substrate portion having a pressure chamber in fluid
communication with said liquid ejection outlet and
15 having an opening; a piezoelectric structure connected
so as to plug the opening, said manufacturing method
comprising: a step of forming a second oxide layer on
a silicon substrate having a monocrystal silicon layer
on a silicon layer with an oxide layer interposed
20 therebetween;

a step of forming a piezoelectric film of a
single orientation crystal monocrystal structure on
the second oxide layer;

25 a step of separating the piezoelectric film
into a plurality of portions;

a step of an upper electrode on the

piezoelectric film; and

a step of forming said pressure chamber.

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